22301

12223

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) State principle of plane table surveying with its use.

b) Define transiting and swinging.

c) Define telescope normal and telescope inverted.

d) State limitations of tacheometry.

e) Classify horizontal and vertical curve.

f) List two uses of EDM.

g) State uses of GIS.

Marks

2. Attempt any THREE of the following: **12**

a) Define orientation and describe with neat sketch back sighting method of orientation.

b) Describe measurement of Magnetic bearing of line with Theodolite.

c) State any four essential characteristics of Tacheometer.

d) Draw a simple circular curve with all notations.

3. Attempt any THREE of the following: **12**

a) List all accessories of plane table with its use.

b) State the errors eliminated by repetation method in measurement of horizontal angle by theodolite.

c) Describe procedure of measurement of vertical angle by transit theodolite.

d) List the functional keys in total station with its uses.

4. Attempt any THREE of the following: **12**

a) Explain principle of EDM with neat sketch.

b) Explain procedure of measurement of horizontal angle by Micro-Optic theodolite.

c) Explain applications of remote sensing in civil engineering.

d) State different sources of errors in GIS.

e) Differentiate between radiation and intersection methods of plane table surveying.

5. Attempt any TWO of the following: **12**

a) A traverse survey was conducted and following data is received, find missing length and bearing of line ST.

Line	Length (m)	Bearing
PQ	154.80	78° 30′
QR	174.00	155° 35′
RS	238.50	248° 42′
ST	?	?

Marks

b) A tacheometer was set up at sta.'A' and following reading were taken on a vertically held staff. The instrument is fitted with analytic lens. Determine distance AB & RL of B.

Station	Staff Station	Vertical Angle	Hair Reading	Remarks
A	BM	+ 2° 0′	1.050, 1.105, 1.160	RL of BM = 150.000
A	B	– 6° 30′	0.950, 1.055, 1.160	

c) State salient features of total station with its uses.

6. Attempt any TWO of the following: **12**

a) The following included angles are measured in closed traverse ABCDEA.

$\angle A = 87° 50' 20''$, $\angle B = 114° 55' 40''$, $\angle C = 94° 38' 50''$, $\angle D = 129° 40' 40''$, $\angle E = 112° 54' 30''$, If the bearing of line AB is $221° 18' 40''$. Calculate bearings of remaining lines.

b) Calculate latitude and departure for following observations:

Line	Length	WCB
AB	162	120° 30′
BC	142	17° 30′
CD	201	220° 30′
DA	120	333° 20′

c) Describe the procedure of setting simple circular curve by offsets from long chord method with neat sketch.